UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,883	01/09/2002	Sanjaya Kumar	ANDIP007	1172

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

		Application No.	Applicant(s)
Office Action Summary		10/045,883	KUMAR ET AL.
		Examiner	Art Unit	
		Ranodhi Serrao	2141	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 May 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>*1,3-29 and 31-52*</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>*1,3-29 and 31-52*</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)   Office Action Summary   Part of Paper No./Mail Date 05082007

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08 May

2007 has been entered.

Response to Arguments

2.   Applicant's arguments filed 08 May 2007 have been fully considered but they are

not persuasive.

3.   The applicant argued that,

> It is important to note that in Terrell, a frame's destination is a virtual entity. However,
> Terrell says nothing about a virtual port. Rather, Terrell merely discloses a virtual
> destination identifier associated with a virtual participant. Applicant respectfully submits
> that a virtual destination identifier associated with a virtual participant is not a virtual port.
> Accordingly, Terrell fails to disclose or suggest the implementation of a port acting on
> behalf of a virtual port.

4.   The examiner points out that in ¶ 36, Terrell states, "An administrating process

may assign network port identifiers to be used for virtual members, virtual resources,

and proxy processes." Therefore, virtual resources do have virtual ports. Also figure 1

shows that member 115 contains port 166.

5.   The applicant furthermore stated that,

> However, paragraphs 123 and 228 fail to disclose or suggest sending a virtualization
> message to a port indicating that the port is to handle messages addressed to an address
> or identifier assigned to the virtual port on behalf of the virtual port, as claimed. As set

forth above, the "nonvirtual member" of Terrell is not instructed to handle messages addressed to an address or identifier assigned to a virtual port on behalf of the virtual port. Moreover, the nonvirtual member of Terrell does not act on behalf of the virtual port. In view of the above,

6.   In ¶ 122, Terrell states, "For example, when port I/O process 402 determines that a frame is a request to identify or to establish a virtual member, port I/O process passes the frame (or related information) to launch proxy process 416." It is clear from this statement that a port is handling messages addressed to a virtual member, and as shown above, a virtual member has ports.

7.   The applicant also argued that in Terrell,

> **The frames do not identify a virtual port. In no manner is the port receiving a frame addressed to it instructed to handle frames addressed to a virtual port. Rather, the port is unaware that the frame was previously addressed to a virtual port. Accordingly, Applicant respectfully submits that Terrell fails to cure the deficiencies of Blumenau.**

8.   Terrell discloses a virtual port identifier table 636 which is used during readdressing and routing data frames originally addressed to the virtual member, see ¶ 17 and ¶ 134.

9.   The examiner points out that the pending claims must be "given the broadest reasonable interpretation consistent with the specification" [In re Prater, 162 USPQ 541 (CCPA 1969)] and "consistent with the interpretation that those skilled in the art would reach" [In re Cortright, 49 USPQ2d 1464 (Fed. Cir. 1999)]. In conclusion, upon taking the broadest reasonable interpretation of the claims, the cited references teach all of the claimed limitations. And the rejections are maintained. See below.

10.   **Examiner's Note:** Examiner has cited particular columns and line numbers or paragraphs in the references as applied to the claims above for the convenience of the

applicant. Although the specified citations are representative of the teachings of the art

and are applied to the specific limitations within the individual claim, other passages and

figures may apply as well. It is respectfully requested from the applicant in preparing

responses, to fully consider the references in its entirety as potentially teaching of all or

part of the claimed invention, as well as the context.

Claim Rejections - 35 USC § 102

11.   The text of those sections of Title 35, U.S. Code not included in this action can .

be found in a prior Office action.

12.   Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by Terrell et al.

(2003/0210686).

13.   As per claims 21, Terrell et al. teaches in a first network device a method of

implementing storage virtualization in a storage area network, the method comprising:

sending a virtualization message to a port of a second network device within the storage

area network, the virtualization message instructing the port to handle messages

addressed to a virtual port of a virtual enclosure, the virtual enclosure having one or

more virtual ports and being adapted for representing one or more virtual storage units,

each of the virtual storage units representing one or more physical storage locations on

one or more physical storage units of the storage area network (¶ 25), wherein the

virtualization message indicates that the port is to handle messages addressed to an

address or identifier assigned to the virtual port (¶ 228-238) that are received by the

port of the second network device subsequent to the virtualization message sent by the

first network device such that the first network device instructs the port of the second

network device to act on behalf of the virtual port (¶ 123); and receiving a virtualization

response from the port of the network device in response to the virtualization message

(¶ 308).

Claim Rejections - 35 USC § 103

14.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

15.   Claims 1, 3-14, 19, 21-28, 37, 39, 43, 46, and 49 are rejected under 35 U.S.C.

103(a) as being unpatentable over Blumenau et al. (6,260,120) and Terrell et al.

16.   As per claim 1, Blumenau et al. teaches a method of implementing storage

virtualization in a storage area network (see Blumenau et al., column 8, lines 5-10), the

method comprising: creating a virtual enclosure, the virtual enclosure having one or

more virtual ports and being adapted for representing one or more virtual storage units,

each of the virtual storage units representing one or more physical storage locations on

one or more physical storage units of the storage area network (see Blumenau et al.,

column 7, lines 16-23); associating each of the virtual ports of the virtual enclosure with

a port of a network device within the storage area network (see Blumenau et al., column

18, lines 8-34), thereby enabling one or more network devices within the storage area

network to be associated with the virtual ports (see Blumenau et al., col. 25, lines 8-28);

and assigning an address or identifier to each of the virtual ports (see Blumenau et al.,

column 11, line 58-column 12, line 8). But fails to teach a method wherein associating

each of the virtual enclosure ports of the virtual enclosure with a port of a network

device within the storage area network, includes: sending a message from a first

network device to a port of a second network device within the storage area network to

instruct the port of the second network device to handle messages addressed to the

address or identifier assigned to the associated virtual port, that are received by the port

of the second network device subsequent to the message sent by the first network

device such that the first network device instructs the port of the second network device

to act on behalf of the virtual port. However, Terrell et al. teaches a method wherein

associating each of the virtual enclosure ports of the virtual enclosure with a port of a

network device within the storage area network, includes: sending a message from a

first network device to a port of a second network device within the storage area

network to instruct the port of the second network device to handle messages

addressed to the address or identifier assigned to the associated virtual port (see Terrell

et al., ¶ 158), that are received by the port of the second network device subsequent to

the message sent by the first network device (see Terrell et al., ¶ 123) such that the first

network device instructs the port of the second network device to act on behalf of the

virtual port (see Terrell et al., ¶ 237). It would have been obvious to one having ordinary

skill in the art at the time of the invention to modify Blumenau et al. to a method wherein

associating each of the virtual enclosure ports of the virtual enclosure with a port of a

network device within the storage area network, includes: sending a message from a

first network device to a port of a second network device within the storage area

network to instruct the port of the second network device to handle messages

addressed to the address or identifier assigned to the associated virtual port, that are received by the port of the second network device subsequent to the message sent by the first network device such that the first network device instructs the port of the second network device to act on behalf of the virtual port. in order to implement storage virtualization by receiving a frame from the network, determining by parsing the frame, the protocol and logical unit number, and routing the frame to a queue according to a traffic class associated with the logical unit number in routing information prepared for the processors (see Terrell et al., abstract).

17.   As per claim 3, Blumenau et al. and Terrell et al. teach a network device, wherein the storage area network is a virtual storage area network (see Blumenau et al., column 24, lines 31-55).

18.   As per claim 4, Blumenau et al. and Terrell et al. teach a network device, wherein a Node World Wide Name is associated with the virtual enclosure (see Blumenau et al., column 11, lines 15-24).

19.   As per claim 5, Blumenau et al. and Terrell et al. teach the mentioned limitations of claims 1 and 4 above but Blumenau et al. fails to teach a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated port of a network device within the storage area network. However, Terrell et al. teaches a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated port of a network device within the storage area network (see Terrell et al., ¶ 96). It would have been obvious to one having ordinary skill

in the art at the time of the invention to modify Blumenau et al. to a network device,

wherein a Port World Wide Name is assigned to each of the virtual ports such that the

Port World Wide Name is associated with an associated port of a network device within

the storage area network in order to develop routing information between physical

entities by routers without user intervention (see Terrell et al., ¶ 97).

20.   As per claim 6, Blumenau et al. and Terrell et al. teach the mentioned limitations

of claim 1 above but Blumenau et al. fails to teach a network device, wherein the port of

the second network device within the storage area network is a port of a fibre channel

device. However, Terrell et al. teaches a network device, wherein the port of the second

network device within the storage area network is a port of a fibre channel device (see

Terrell et al., ¶ 217). It would have been obvious to one having ordinary skill in the art at

the time of the invention to modify Blumenau et al. to a network device, wherein the port

of the second network device within the storage area network is a port of a fibre channel

device in order to implement storage virtualization by receiving a frame from the

network, determining by parsing the frame, the protocol and logical unit number, and

routing the frame to a queue according to a traffic class associated with the logical unit

number in routing information prepared for the processors (see Terrell et al., abstract).

21.   As per claim 7, Blumenau et al. and Terrell et al. teach a network device, wherein

an FCID is assigned to each of the virtual ports (see Blumenau et al., column 28, lines

33-51).

22.   As per claim 8, Blumenau et al. and Terrell et al. teach a method, further

comprising: selecting a number of virtual enclosure ports to be included in the virtual

(see Blumenau et al., column 24, lines 10-33).

23.   As per claim 9, Blumenau et al. and Terrell et al. teach a network device, wherein

the number of virtual ports of the virtual enclosure is greater than a number of ports of

each network device within the storage area network (see Blumenau et al., column 18,

lines 8-34).

24.   As per claim 10, Blumenau et al. and Terrell et al. teach a method, wherein

associating each of the virtual ports of the virtual enclosure with a port of a second

network device within the storage area network comprises: associating the virtual ports

with ports of one or more network devices within the storage area network (see

Blumenau et al., column 25, lines 29-49).

25.   As per claim 11, Blumenau et al. and Terrell et al. teach a network device,

wherein associating each of the virtual ports of the virtual enclosure with a port of a

network device within the storage area network comprises: sending a bind message to

a port of a network device within the storage area network (see Blumenau et al., col. 24,

lines 10-33), thereby binding the port of a network device within the storage area

network to one or more of the virtual ports (see Blumenau et al., column 10, lines 42-

67).

26.   As per claim 12, Blumenau et al. and Terrell et al. teach a network device, further

comprising: sending a trap message to one or more additional ports of one or more

network devices within the storage area network (see Blumenau et al., col. 41, lines 22-

53), thereby instructing the one or more additional ports of one or more network devices

within the storage area network to trap messages directed to one of the virtual ports

(see Blumenau et al., column 41, lines 8-21).

27.   As per claim 13, Blumenau et al. teaches a network device, wherein one or more

of the virtual storage units each comprises a VLUN or other virtual representation of

storage on the storage area network (see Blumenau et al., column 24, lines 34-55 and

column 43, lines 1-21).

28.   As per claim 14, Blumenau et al. and Terrell et al. teach a method, farther

comprising: assigning one or more virtual storage units to the virtual enclosure (see

Blumenau et al., column 24, lines 34-55).

29.   As per claim 19, Blumenau et al. teaches a method of performing LUN mapping

in a storage area network, the method comprising: accessing a LUN mapping table

having one or more entries (see Blumenau et al., column 7, lines 9-11), each of the

entries identifying an initiator in the storage area network, one or more of a set of one or

more virtual ports of a virtual enclosure, and associating a specified logical unit with one

or more virtual storage units (see Blumenau et al., column 27, lines 23-38), each of the

virtual storage units representing one or more physical storage locations on one or more

physical storage units of the storage area network (see Blumenau et al., column 24,

lines 10-33), and when a request for the specified logical unit is received from the

initiator via one of the associated virtual ports, identifying one of the entries in the LUN

mapping table and employing the one or more virtual storage units specified in the entry

to service the request (see Blumenau et al., column 29, lines 43-56). But fails to teach

wherein the virtual enclosure is adapted for representing the set of one or more virtual

storage units and each of the virtual enclosure ports is associated with a port of a

network device within the storage area network, wherein the port of the network device

has received a message from another network device instructing the port to handle

messages addressed to the associated virtual port that are received by the port of the

network device subsequent to the message sent by the another network device such

that the another network device instructs the port of the network device to act on behalf

of the virtual port. However, Terrell et al. teaches wherein the virtual enclosure is

adapted for representing the set of one or more virtual storage units and each of the

virtual enclosure ports is associated with a port of a network device within the storage

area network, wherein the port of the network device has received a message from

another network device instructing the port to handle messages addressed to the

associated virtual port (see Terrell et al., ¶ 158) that are received by the port of the

network device subsequent to the message sent by the another network device such

that the another network device instructs the port of the network device to act on behalf

of the virtual port (see Terrell et al., ¶ 123). It would have been obvious to one having

ordinary skill in the art at the time of the invention to modify Blumenau et al. to wherein

the virtual enclosure is adapted for representing the set of one or more virtual storage

units and each of the virtual enclosure ports is associated with a port of a network

device within the storage area network, wherein the port of the network device has

received a message from another network device instructing the port to handle

messages addressed to the associated virtual port that are received by the port of the

network device subsequent to the message sent by the another network device such that the another network device instructs the port of the network device to act on behalf of the virtual port in order to implement storage virtualization by receiving a frame from the network, determining by parsing the frame, the protocol and logical unit number, and routing the frame to a queue according to a traffic class associated with the logical unit number in routing information prepared for the processors (see Terrell et al., abstract).

30.   As per claim 22, Terrell et al. teaches the mentioned limitations of claim 21 above but fails to teach an apparatus, wherein the virtual port is identified by a NWWN and a PWWN. However, Blumenau et al. teaches a method, wherein the virtual enclosure port is identified by a NWWN and a PWWN (see Blumenau et al., column 12, lines 27-54). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Terrell et al. to a method, wherein the virtual enclosure port is identified by a NWWN and a PWWN in order to create a method that may be transparent to any high-level file system procedures that may be used by the hosts for managing access to files stored in the logical volumes to which a host is permitted to access (see Blumenau et al., col. 2, lines 19-41).

31.   As per claims 23-31 and 36-49, the above-mentioned motivation of claim 22 applies fully in order to combine Blumenau et al. and Terrell et al.

32.   As per claim 23, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization response indicates that the port is configured to handle messages addressed to the virtual port of the virtual enclosure (see Terrell et al., ¶ 25).

33.   As per claim 24, Blumenau et al. and Terrell et al. teach an apparatus, wherein

the virtualization message indicates that the port is to obtain an address or identifier

assigned to the virtual port (see Terrell et al., ¶ 25).

34.   As per claim 25, Blumenau et al. and Terrell et al. teach an apparatus, wherein

the virtualization message is a bind message or a trap message (see Blumenau et al.,

column 11, lines 41-57).

35.   As per claim 26, Blumenau et al. and Terrell et al. teach an apparatus, wherein

the virtualization response comprises the address or identifier assigned to the virtual

port (see Blumenau et al., column 11, line 58-column 12, line 8).

36.   As per claim 27, Blumenau et al. and Terrell et al. teach an apparatus, wherein

the virtualization message indicates that the port is to obtain an address or identifier

assigned to the virtual enclosure port from a DNS server (see Terrell, ¶ 96).

37.   As per claim 28, Blumenau et al. and Terrell et al. teach a method, further

comprising: receiving an address or identifier assigned to the virtual port (see Blumenau

et al., column 12, lines 27-54).

38.   As per claim 37, Blumenau et al. and Terrell et al. teach a method, further

comprising: obtaining and storing the address or identifier assigned to the virtual port

(see Blumenau et al., column 12, lines 27-54).

39.   As per claim 39, Blumenau et al. and Terrell et al. teach a method, further

comprising: sending the address or identifier assigned to the virtual port (see Blumenau

et al., column 12, lines 27-54).

40.   As per claim 43, Blumenau et al. and Terrell et al. teach a method, further

comprising: handling messages addressed to the address or identifier assigned to the

virtual port (see Blumenau et al., column 16, line 60-column 17, line 19).

41.   As per claim 46, Blumenau et al. and Terrell et al. teach a method, further

comprising: receiving a report message requesting an identification of one or more of

the virtual storage units supported by an address or identifier assigned to one of the

virtual ports (see Blumenau et al., column 12, lines 27-54); sending a reply message

identifying one or more of the virtual storage units (see Blumenau et al., column 25,

lines 50-67).

42.   As per claim 49, Blumenau et al. and Terrell et al. teach a method, wherein the

one or more of the virtual storage units identified in the reply message are those virtual

storage units that are visible to an initiator sending the report message (see Blumenau

et al., column 25, lines 50-67).

43.   Claims 15-18, 20, 29, 31-36, 38, 40-42, 44, 45, 47, 48, and 50-52 have similar

limitations as to claims 1, 3-14, 19, 21-28, 37, 39, 43, 46, and 49, therefore, they are

being rejected under the same rationale.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Ranodhi Serrao whose telephone number is (571)272-

7967. The examiner can normally be reached on 8:00-4:30pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571)272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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6/19/2007

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